

(No Model.)

B. EDGAR.
AXLE LUBRICATOR.

No. 466,399.

Patented Jan. 5, 1892.

Fig. 2.

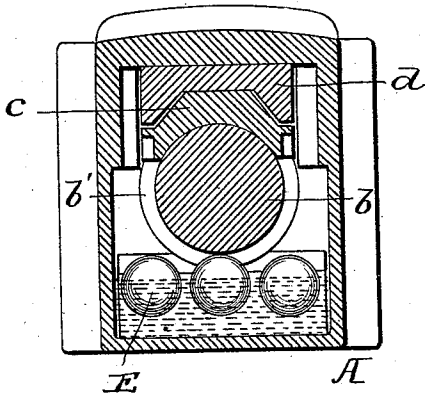


Fig. 4.

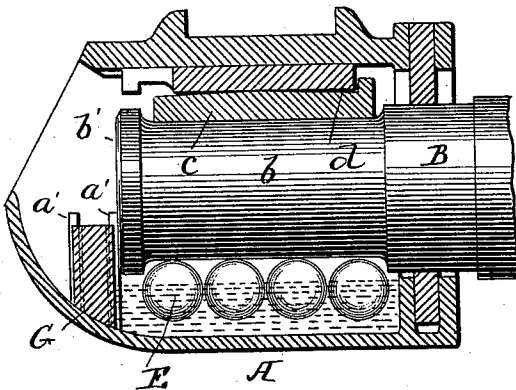


Fig. 1.

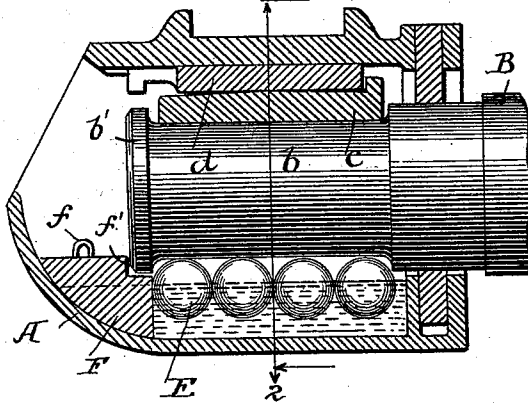
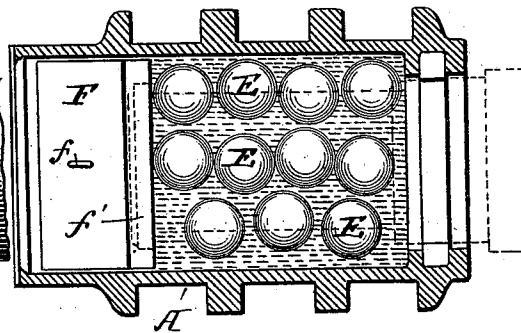


Fig. 3.



Witnesses
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BUTLER EDGAR, OF SUNBURY, PENNSYLVANIA.

AXLE-LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 466,399, dated January 5, 1892.

Application filed September 5, 1891. Serial No. 404,846. (No model.)

To all whom it may concern:

Be it known that I, BUTLER EDGAR, a citizen of the United States, residing at Sunbury, in the county of Northumberland and State of Pennsylvania, have invented certain new and useful Improvements in Axle-Lubricators, of which the following is a specification.

My invention relates to axle-lubricators; and it consists in a simple device for supplying the journals of axles with a constant and ample supply of lubricant.

In the accompanying drawings, in which like reference-signs refer to corresponding parts throughout the several views, Figure 1 is a longitudinal sectional view of an axle-box. Fig. 2 is a cross-section of the same on the line 2 2 of Fig. 1. Fig. 3 is a horizontal section showing the axle in dotted lines; and Fig. 4 is a section similar to Fig. 1, showing a different form of retaining-block.

The present practice in lubricating axle-boxes is defective in many respects and results in many delays to trains and much expense for renewals and repairs. Thus the space within the box around and beneath the journal of the axle is commonly packed with cotton waste which is saturated with oil. This renders it difficult to judge of the proper amount of oil necessary to supply the box, and thus the oil may be wasted by pouring in too much, or an insufficient amount may be supplied. Moreover, the particles worn from the bearing and the sand and other gritty particles which always find their way into the boxes gather on top of the waste and in contact with the journal and produce rapid wear both of the journal and its bearing. Furthermore, when the waste becomes a little dry the bearing and journal become heated and set fire to it, and the heat of the burning waste unites with the frictional heat to destroy the axle.

My present invention consists in providing the axle-box with a layer of balls substantially covering the bottom of the box beneath the journal and made of suitable buoyant material, which shall float freely upon the surface of the oil and by their revolution, when the axle is in motion, carry a supply of oil to the journal.

A further object of my invention is to pro-

vide a lubricating device which may be applied quickly and at a slight expense to any of the common forms of journals and axle-boxes.

In the drawings, A indicates an axle-box of a pattern commonly used, and B the axle, having a journal *b* within the box. The box is provided with the usual lid *a*, and the journal supports a bearing *c*, which is held in place by a key *d*. Below the journal are buoyant balls or spheres E, sufficient in number to nearly cover the bottom of the box, there being left sufficient space to enable the balls to move freely in any direction. As shown in Fig. 3, there are two rows of four balls and one short row of three balls. As the direction of movement of the car changes the balls will change places and the short row will change from side to side, being always on the forward side of the axle. These balls are preferably formed of light wood, either in the natural state or coated with material impervious to oil. They may, however, be formed of any other material—such, for instance, as sheet metal, glass, or celluloid. They should be sufficiently buoyant to float with a large portion of their surface above the level of the oil. In size I prefer to make the balls small enough to admit of their being inserted and withdrawn while the axle is in place within the box. Those floating at the sides of the box may occasionally tend to run out past the end flange *b'* of the axle, and I may employ various means to prevent this. Thus in Figs. 1, 2, and 3 I have shown a retaining-block F arranged across the box at the end of the axle, thus preventing the escape of any of the balls. This block is removable and may be lifted out by means of a staple or other hand-hold *f*. It is prevented from sliding too far in by a shoulder *f'*, which rests against the flange *b'*.

When the boxes are made especially with a view to using my improved lubricator, flanges *a'* may be cast upon either side of the interior and a retaining block or slide G removably held between them, as shown in Fig. 4.

In operation the balls near the center of the box will come in contact with the journal of the axle and be rotated by it, thus carrying the oil up to the journal. The movement of the car sidewise, due to the unevenness of the track, will cause the balls to circulate in

the direction of the length of the axle and thus to successively lubricate every portion of the journal. By permitting the balls to have considerable play in all directions they will continually change their axes of revolution and thus wear equally upon all sides and retain their spherical form. It will be evident that it is impossible for the balls to become in any way jammed in the box on account of the ample space which is allowed for their movement. When it is desired to clean out the box, which only need be done at long intervals, the retaining-block is lifted out. The balls may then be quickly removed and wiped off and then replaced after the dirt is taken from the bottom of the box.

With my improved lubricating device there can be no wear of the journal due to grit or metal chips from the bearing, as the same will

be quickly caught by the balls and transferred to the bottom of the box.

What I claim, and desire to secure by Letters Patent, is—

The combination, with the car journal-box and the journal, of a layer of buoyant balls substantially covering the bottom of the box beneath the journal, and a removable retaining-block arranged across from side to side of the box at the end of the journal, whereby the balls may be readily removed and replaced, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

BUTLER EDGAR.

Witnesses:

J. H. ROCKEFELLER,
JEREMIAH SAVIDGE.